

# PEST TECHNOLOGY

Pest Control and Pesticides

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## CONTENTS

	page
Leader .. .. .	151
Nature's Pattern for the Destruction of Timber by S. A. Richardson, (Governing Director, Richardson & Starling Ltd.) .. .. .	152
Kenya Pyrethrum Growers inspect their new Extract Plant .. .. .	155
New Developments in Agricultural Chemicals .. .. .	156
Abstracts, Fourth British Weed Control Conference .. .. .	158, 161
Fungicides, Herbicides, Insecticides	
The Herbicidal Properties of Amino Triazole, Alone and in Mixtures by J. Walker, (General Manager, A. H. Marks & Co. Ltd.) .. .. .	14
Metasystox: Research Report .. .. .	18
Recommendations for the use of Weedazol .. .. .	21
Abstracts, Fourth British Weed Control Conference .. .. .	22
Weedkiller for Industry .. .. .	159
News .. .. .	163
Book Reviews .. .. .	165
New Publications .. .. .	166
New Products .. .. .	167
Diary Dates .. .. .	168



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## Prendes garde toi !

THE advance of world communications may well pose another problem for the pest technologist, a problem which may be expected to grow: we refer to the introduction of a pest into a country where there are no natural predators. The great increase in the development in air transport may lead to the introduction of pests which would have died on a long sea voyage.

Even before air transport developed as we know it today, the threat of the Colorado beetle was kept in check only because of the vigilance of port authorities and public alike and the vigilance of the port authorities concerned has likewise prevented the even more serious threat of possible introduction of yellow fever virus into India and the whole of the Far East.

Vigilance, therefore, appears to be the key—vigilance armed with knowledge.

But one unusual pest which has arisen due to the use of air travel for which vigilance is not the sole answer, is the seagull which has become such a menace at London airport apparently that action is contemplated against this bird. It is believed they are attracted in cold weather by the warmth of concrete runways.

But, paradoxically, the spread of civilisation may aid the spread of pests. For instance, the building of dams, irrigation canals and ditches in countries such as Egypt, Sudan, Palestine, Iraq and other countries of a like climate could bring about a great increase in the incidence of Bilharzia or Shistosomiasis which together with Malaria and Filariasis constitutes the world's three foremost parasitological diseases. As the snails which are the secondary hosts of this parasite are associated with the presence of perennial water, these irrigation schemes which are so necessary for the development of these countries have created habitats in otherwise unsuitable areas, thus increase the range of this serious disease.

Pest control itself can create problems: one is reminded of the Red Spider which has become only a really serious pest since the use of DDT as an insecticide. As is known, DDT unfortunately appeared to have a greater effect upon predators of Red Spider than on the spider itself.

# ***Nature's Pattern for the Destruction of Timber***

By S. A. RICHARDSON, (Governing Director, Richardson and Starling Ltd.)

**A**N INTRIGUING ADDRESS which illustrated Nature's pattern for the decay of timber and related this to the economic significance of the decay was given by Mr. S. A. Richardson (Governing Director of Richardson & Starling Limited, Winchester), to a joint meeting of the Institute of Wood Science and the Midland Wood Society recently held in Birmingham.

Mr. Richardson said that if a tree was healthy and strong the hazards of decay were not very great. But as soon as it began to sicken, nature was already preparing her morticians and scavengers to break up and bury the 'body.' One could sometimes see moths and wood wasps attacking an apparently healthy tree but generally such attacks only occurred when the tree was "ill." Tree sickness often occurs as the result of physical damage caused by fire, frost, gales, lightning, animals, and insects. Drought and lack of sunlight and air in over congested forests also cause sickness. Animal bark and root eaters will often destroy whole glades of trees. Drought occasionally causes peculiar effects, for a tree can weaken and be attacked by insects but recover quite quickly after rain. This produces the apparent phenomenon of insect galleries inside the heart of a log with no communication with the outside world, subsequent layers of growth having sealed in the borings.

Starting at the point where a tree had died, Mr. Richardson explained that the bark formed a tough and resilient protection which was impervious to moisture. However, there were insects which attacked and perforated the bark with tiny holes having a capillary effect. Water running down the trunk was thus conveyed below the level of the bark, enabling fungal spores carried in by the moisture to germinate and spread a mycelium between the bark and the wood. This loosened the bark which broke away or peeled off. Bark borers, generally,

so far as the timber merchant was concerned, have very little economic significance but two of the larger species of insect which live in bark have caused some misgivings to architects, builders and others interested in building timber. These are an Anobiid insect, *Ernobius mollis*, which lives in the bark on softwood timbers, and the Cerambycid or Longhorn beetle, *Phymatodes testaceus*, which lives in the bark on hardwood timbers, particularly oak. One could imagine the consternation caused by the discovery of flight holes and bore dust in houses built only a few years or even months or weeks. Such damage, if closely examined, is confined to the waney edges of timber, which at one time would have been rejected, and rarely extends deeper than  $\frac{1}{4}$  inch into the wood. It does indicate the use of inferior timber but, in itself, is of very little significance and the immediate remedy consists of removing any bark and a little of the sapwood to which it was attached. Chemical treatment to deal with this type of infestation is patently not justified, but the obvious fact that there must be a high proportion of sapwood present in such timber does often justify a treatment to inhibit the attack of other borers to which it would be particularly vulnerable. Damage caused by the Oak Longhorn, *Phymatodes testaceus*, was often seen in very old buildings and had been mistaken for Death Watch, House Longhorn and other serious forms of attack, by the less knowledgeable surveyors, architects and even self-styled specialists, but there should be no difficulty at all in identifying such damage and assessing its significance. In old buildings, the attack would have ceased many years before the inspection was made.

Continuing the pattern of decay in a dead tree, Mr. Richardson went on to describe the activities and habits of the pinhole or ambrosia beetles. Although of some significance to the handlers of home grown hardwoods,



it was those who dealt with tropical timbers who would be most concerned with this form of damage. In the tropics, this form of attack often materialised within minutes of felling and could penetrate to a considerable depth, even into the heartwood. He emphasised that the pinhole borers, the wood wasps and most of the bark borers bored into wood at the adult stage of their life cycles for the purpose of depositing their eggs and protecting their progeny. The ambrosia beetles (pinhole and shothole borers), lined their tunnels with a minute fungus upon which the larvae fed. This dark ring of fungus around the edge of the holes, the absence of bore dust and the galleries running across the grain of the wood, characterised the workings of the ambrosia beetles.

The borings of ambrosia beetles rarely weakened timber to any appreciable extent but the damage could be of economic significance in timber intended for decorative finishes or for the manufacture of some kinds of furniture. The timber merchant in this country could leave timber showing signs of pinhole damage in his yard without fear of the damage spreading to adjoining timbers.

The Lyctus (Powderpost) Beetle was quite a different 'kettle of fish.' This insect attacked the wood in the larval stage of its life cycle and thus was a true consumer of timber. It often occurred in timber which also showed evidence of damage by pinhole borers. The identifying features were that whilst the ambrosia (pinhole borers) bored across the grain, leaving a clean hole except for a dark ring caused by the fungal growth, the Lyctus channels go *with* the grain and are filled with a pale, soft, powdery deposit of bore dust. The Lyctus only attacks semi-seasoned hardwoods and fully seasoned wood became immune. Thus the length of time in which Lyctus could attack timber was limited. This characteristic is governed by the presence of starch in the wood, which appears to form an essential part of the insects' diet. As starch is only present in sapwood, the attack will be confined to sapwood, where it is clearly defined. Evidence of Lyctus attack in the oak or other hardwood timbers in old buildings can, generally, be ignored unless, of course, the affected timber has recently been installed for repair or other reasons. All trace of activity would have ceased as the starch changed its chemical composition as the wood seasoned.

Kiln seasoning, unless carried out to certain Forest Products Research Laboratory specifications, which are rarely adhered to, does not immunise timber against Lyctus attack. In fact, badly kilned timber is likely to encourage infection by opening the pores in which the insects habitually lay their eggs. A great deal of the



*At the joint meeting of the Institute of Wood Science, Midlands Branch, and The Midland Wood Society, held at the Ambassadors' Club, Edgbaston, Birmingham, and addressed by Mr. S. A. Richardson. Seen discussing a specimen piece of timber which had been subjected to attack by insects, may be seen, left to right: Mr. A. Miller, Mr. B. W. Eades, F.I.W.Sc., Director of Messrs. V. A. Luck Ltd., Birmingham, who organised the lecture; Mr. W. E. Munn, Chairman of the Midland Wood Society; Mr. D. S. F. Rayner, Mr. S. A. Richardson, Governing Director of Richardson and Starling Limited, and who spoke on the subject of "Nature's Pattern for the Destruction of Timber."*

worries of flooring specialists who have experienced Lyctus attack in recently laid hardwood floors could have been reduced by this knowledge. Sealing open pores will prevent Lyctus attack but correct kilning or the use of fully seasoned timber would be a better remedy. If in doubt, the timber should be treated with a suitable, persistent insecticide.

The next phase in the breakdown of timber by insects was attack by the well known Anobiids, the Death Watch Beetle and Common Furniture Beetle. He mentioned previously the danger of mistaking the comparatively harmless *Ernobius mollis* for these far more serious pests. Apart from the fact that *Ernobius* is always associated with the presence of bark, it was smaller than the Death Watch, larger than the Furniture Beetle, cleaner in appearance and reddish-brown in colour. It also was a softer insect and when crushed under a finger nail did not audibly 'crunch' like the other two beetles. Mr. Richardson emphasised at various stages in his talk, and particularly at this stage, the advisability and value of employing an expert to diagnose the type of infection, identify the insect or fungus and assess its economic and structural significance. He mentioned an instance of reported Death Watch activity in pre-fabricated timber buildings entirely carcassed with softwoods. The Death Watch was, of course, *Ernobius mollis* emerging from



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studding timbers to which bark was still attached, which gnawed their way through hardboard panelling producing holes larger than the Furniture Beetle but smaller than the Death Watch. Correct identification and a prescribed method of treatment saved the cost of the extremely expensive treatment which had been suggested and a probably still more expensive legal action.

Mr. Richardson then showed a film which he had made himself and which is recommended to any society or organisation wishing to see something unusual. It is a fascinating film which shows the Death Watch, Furniture Beetle and House Longhorn Beetle in all stages of their life cycles, the damage they do to buildings and all their identifying characteristics. He also showed the methods he recommends for examining properties in which decay is suspected, followed by a sensational picture of dry rot, part of which was in colour to show the appearance of spores and sporophores.

During questions, Mr. Richardson was asked his view as to why the House Longhorn Beetle seemed to have attacked the Camberley area only. His view was that the beetle was more widespread than was supposed. It was probably more concentrated in North-West Surrey than elsewhere but attention had been focussed on that area because most of the houses in which the insect was located were council properties which could be examined systematically by competent observers. Private property owners were not inclined to throw open their houses to inspectors and this made it very difficult to obtain a true picture of the extent of the trouble.

A number of instances of active infestation had been reported in many parts of Britain but possibly only one in a hundred of the houses affected in those areas had been in the possession of a person who had appreciated that something was wrong and had taken action to learn the cause and deal with it.

A prevalence on a certain housing estate might well be due to using timbers obtained from the same source. An instance of this could be given in the Channel Islands. His company had been called to an infestation and had found it to be Longhorn attack. Investigation of the history of the timber in question revealed that it had been part of a consignment of railway sleepers brought to the island by the Germans early in 1944. These timbers must have been infected before they left Germany but insects did not emerge or in any way disclose themselves until 1957. Several other instances have since been reported, all of which occurred in the timber imported from Germany. So far as he knew, Mr. Richardson concluded, no action had been taken officially to deal with this menace although, to him, it threatened the properties of Jersey with a menace as serious as the Colorado Beetle threatened the potato industry.



## Kenya Pyrethrum Growers Inspect their New Extract Plant

Mr. D. H. Pell Smith, Chairman, Pyrethrum Board of Kenya (seen in the centre of the three people nearest the machinery), inspects the newly built plant which extracts nature's oldest insecticide from the Pyrethrum flower. The plant, shortly due to come into production, is at Nakuru, farming capital of the Kenya highlands, and was inspected by Kenya Pyrethrum growers during their Annual Delegate Conference held in Nakuru.

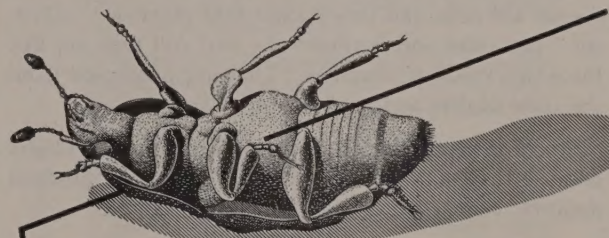
The progress made by the Pyrethrum industry in Kenya in the past two years was described as spectacular by the Governor of the Colony, Sir Evelyn Baring, G.C.M.G., K.C.V.O., when he spoke at the luncheon recently given at Nakuru by the Pyrethrum Board of Kenya on the occasion of the Annual Delegate Conference of Pyrethrum growers.

The Governor pointed out that the Pyrethrum Board, which markets the flower for the growers, paid out to growers in 1948 a total of £165,000, but in 1958 it paid out £1,226,000 more. In the same period the Board's capital assets rose from £71,000 to £208,000. He also referred to the increasing growing of Pyrethrum by Africans and thanked the Board for its co-operation in this work.

During the conference of the delegates, who are elected by Pyrethrum growers, the Chairman of the Board, gave an encouraging picture of the future. He also stated that the cost of the Board's new extract plant will be within the estimate of £200,000.

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### NEW KENYA PYRETHRUM EXTRACT PLANT

*Seen in the pictures are Kenya Pyrethrum growers and members of the Pyrethrum Board inspecting their new plant.*



# NEW DEVELOPMENTS IN AGRICULTURAL CHEMICALS\*

THE tremendous developments in agricultural chemistry are providing dozens of new compounds to affect soils, and plants, and crops in new ways. They do not kill pests and they do not feed plants as "classical" pesticides and fertilisers do, and still they are like these two kinds of materials. They are purchased from the same dealers and applied in the same ways.

Some of them seem to be closely related to fertilisers because they make plants grow better or they produce desirable changes in crops or soils, for example:

Indolebutyric acid, naphthalene acetic acid, naphthalene acetamide, and phenylacetic acid, to promote rooting of cuttings.

Inoculants of nitrogen-fixing bacteria for legume plantings.

Carbon dioxide injected into irrigation water to acidify alkaline soils.

Alkyl aryl sulfates or sulfonates, and similar wetting agents to improve penetration of the soil by irrigation water.

Polyelectrolytes, enzymes, plant extracts, and lignin preparations to improve the texture of compact and difficult soils.

Parachlorophenoxyacetic acid to improve set of tomatoes and berries, and to produce parthenocarpic fruits of Calimyrna figs.

Parachlorophenoxyacetic acid and benzole 2-oxyacetic acid to increase the size of Thomson seedless grapes.

2,4-Dichlorophenoxyacetic acid, 2,4,5-trichlorophenoxyacetic acid, and naphthalene acetic acid to increase the size of citrus fruits and to reduce excessive drop of deciduous fruits.

2,4-Dichlorophenoxyacetic acid to increase the yield of latex from rubber trees.

Ethylene chlorohydrin to break dormancy in potatoes.

Maleic hydrazide on potato plants and methyl ester of naphthalene acetic acid on the tubers to prolong dormancy in potatoes and to prevent sprouting.

Tri-iodobenzoic acid to promote flowering in pineapples.

Allantoin to promote healing of pruning cuts on trees.

Colchicine to induce polyploidy.

Gibberellic acid to make plants grow taller or more rapidly.

Maleic hydrazide to make plants grow more slowly.

2,4-Dichlorophenoxyacetic acid to promote colouration of potatoes and apricots.

2,4,5-Trichlorophenoxyacetic acid to delay colouration of lemons.

N-meta-tolyl phthalamic acid to increase flowers and prevent fruit drop on certain crops, for example, on cotton to increase lint and seed production.

Vitamin B<sub>1</sub> to aid in overcoming the shock of transplanting ornamentals.

Naphthaleneacetic acid and 2,4,5-trichlorophenoxy propionic acid to reduce pre-harvest drop of apples and to improve color of the fruit.

Naphthyl acetamide to promote rooting of cuttings, to aid in transplanting plants, and to increase the set of tomatoes.

Some of the new materials seem more closely related to pesticides because they kill a pest or at least part of a plant, for example:

Sodium chlorate, calcium cyanamide, pentachlorophenol, sodium ethyl xanthate, tributyl phosphorotrithioite, and many other compounds to defoliate cotton plants at harvest time to facilitate picking.

Dinitro-o-secondary butyl phenol, pentachlorophenol, disodium 3,6-endoxo-hexahydro phthalate, and other compounds to desiccate legume seed crops at harvest time to improve harvest of the seed.

Sodium chlorate and sodium chloroacetate to desiccate rice and milo at harvest time to improve the crop and promote drying.

Sodium arsenite to kill tops of potato plants at harvest time.

Dinitrocresol and naphthyl acetamide, and dinitro-ortho-secondary butyl phenol to kill blossoms on trees grown as ornamentals where no fruit is wanted and to reduce fruit set on apple and peach trees.

Bacillus popillae (milky disease) for control of Japanese beetle and B. thuringiensis for control of alfalfa caterpillar.

Sometimes a chemical acts in an indirect way or in an unknown way to produce a beneficial effect. Elemental



sulphur applied to the soil does not appear to provide any direct fungicidal control of scab on potatoes but in acidifying the soil it provides an environment that is not favourable for development of scab. It was known for a number of years that applications of zinc compounds corrected mottle leaf on citrus even though it was not known at that time whether the disturbance was caused by a fungus or by a nutritional deficiency. There have been many reports of experiments wherein fungicides increased yields in experimental plots that could not be accounted for by the disease control observed. It is not clear whether they may have controlled some pest or contributed to the nutrition of the plant either directly or through some action on soil micro-organisms. Chemicals were applied for control of such things as monkey face on olives, black heart on celery, and psoriasis on citrus trees before the experts had agreed upon the cause of the trouble.

There is another group of products still further out on the fringe of agricultural chemicals which are probably not in the scope of any of the present laws. These include:

Zineb for protection of plants from damage by smog.

Preservatives for cut flowers.

Colourants for flowers and lawns.

Wax and oil sprays and dips to improve the appearance of vegetables and ornamental foliage and to inhibit loss of moisture when transplanting nursery stock.

Anti-oxidants to prevent discolouration of the cut butts of asparagus and lettuce.

Ethylene oxide and other fumigants to promote colouration of harvested fruits.

Bacterial cultures to promote decomposition of crop residues and assist in reworking fields after harvest.

Some of these chemicals are just in the experimental phase or are marketed only in the small-package trade for garden use, but many of them are important in California agriculture where their wide-scale use has become standard practice. These materials are commonly sold by the same firms that market other pesticides and fertilisers, they are applied in the same manner and with the same equipment as pesticides and fertilisers are applied, and in some cases they are applied in combination with other pesticides or fertilisers.

If a chemical increases the yield of a crop or improves the quality of a crop, a farmer is not likely to distinguish between the way in which the chemicals act. It is reasonable to expect that the laws will provide the same type of control over all of them.

*\* From a paper presented at the Sixth California Fertiliser Conference, California State Polytechnic College, San Luis Obispo, 14th April, 1958, by Robert Z. Rollins.*

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## HERBICIDE TESTS ON FIELD BEANS.\*

By J. G. ELLIOTT, M.A.

A.R.C. Unit of Experimental Agronomy, Oxford University.

### Summary

The results are reported of three experiments carried out on field beans *vicia faba* in 1957 and 1958. In a screening experiment, simazin, dalapon, endothal, CMPP, 2,3,6-trichlorobenzoic acid and sodium monochloracetate were applied at different doses to spring beans. As a result of these treatments, simazin was selected for further investigation. The second experiment was on a farm crop of winter beans, in which simazin at 0.5, 1 and 2 lb. per acre was mixed into the seedbed on some of the plots and applied pre-emergence to the soil surface on others. As far as possible, the crop was kept clean by hand-weeding. None of the chemical treatments had any significant effect on the growth and yield of the beans ( $P=0.05$ ). The mean yield of 16.6 cwt. per acre on the simazin treated plots compared favourably with 15.7 cwt. per acre on the hand-weeded controls.

In the third experiment simazin at 0.5, 1 and 2 lb. per acre was applied to the soil surface before the emergence of a crop of spring beans. Half the plots were hand-weeded and the others received no post-emergence cultivations. When accompanied by hand-weeding, the mean yield of 22.7 cwt. per acre on the simazin treated plots was not significantly different from the yield of 23.0 cwt. per acre on the hand-weeded controls. The beans on the control plots that were not weeded, suffered competition from a mixed weed population, which reduced the yield to 20.2 cwt. per acre. 2 lb. per acre of simazin gave a satisfactory control of nearly all the weeds and without hand-weeding resulted in a yield of 22.6 cwt. per acre which was significantly higher than that of the unweeded control, and not significantly different from that of the hand-weeded control.

From these experiments it is concluded that on an Oxford clay soil simazin had little toxicity to field beans at dosages up to 2 lb. per acre, at which rate it is capable of controlling many annual weeds, and that it is worthy of more widespread testing.

### Introduction

Each year in England and Wales about a hundred thousand acres of land are sown with field beans. Although this useful crop would appear to be suited to the mechanisation that has greatly increased the convenience of corn growing, its acreage is probably limited by difficulties in controlling weeds, liability to disease and rather low yields. In the absence of an efficient selective herbicide for field beans, weed control has in the past been attempted by steerage hoeing and such small amounts of hand hoeing as are available these days. In an effort to fill this gap in the use of chemical weedkillers the A.R.C. Unit of Experimental Agronomy has, from time to time, tested any chemicals that appeared promising on field beans. Such a series of tests was started in 1957 with a batch of new chemicals. Simazin, which had been found to have a low toxicity to field beans in greenhouse experiments, was considered worthy of more extensive testing in 1958.<sup>1</sup> The purpose of this paper is to give details of the three experiments that were carried out and to discuss the results obtained from them.

### Discussion

Simazin is an insoluble chemical which is available as a 50% w/w wettable powder. It has low toxicity to mammals, is non-staining, non-corrosive and may be conveniently applied in a low volume spraying machine. It has practically no direct contact action but acts chiefly through the root system. In consequence, the speed of action, toxicity and persistence of simazin are likely to be influenced by the soil type to which it is applied. The following weed species have been controlled by 1-2 lb. per acre of simazin: black medick *medicago lupulina*, speedwells *veronica persica* and *hederifolia*,<sup>2</sup> white mustard *raphanus raphanistrum*, fathen *chenopodium album*, fumitory *fumaria officinalis*, hairy vetch *vicia hirsuta*, annual meadow-grass *poa annua* and poppy *papaver sp.*<sup>3</sup>

One of the properties of simazin that is of particular concern is its persistence in the soil. Any possibility that the application of simazin to beans might limit the freedom of cropping after the beans have been harvested, would seriously affect farmer's acceptance of the chemical. Experiments have been in progress

for two seasons to investigate the various factors that contribute to the retention in or disappearance from the soil. As yet the inquiry has not produced sufficient results to permit a reliable statement of the likely persistence of simazin. However, it seems possible that an application of up to 2 lb. per acre in the spring would not in the United Kingdom interfere with the choice of crops to be grown in the spring a year later.

Although simazin appears to be a most promising herbicide for field beans its exact method of use has yet to be worked out. Further experiments are necessary to ascertain accurately the susceptibility or resistance of all the weed species that will be encountered, and whether they may best be controlled by mixing the chemical into the soil or by pre-emergence application to the soil surface. Although successful weed control would appear to remove the necessity for any post-emergence cultivations such as steerage-hoeing it might be that the disturbance of the soil surface has a beneficial effect apart from weed control. Under the circumstances, it would be desirable to combine the application of simazin with steerage-hoeing, the chemical being applied only within the row and the steerage-hoe being used between the rows. Such a combination would greatly reduce both the cost of the herbicide application and the likely persistence of the chemical in the soil.

### ACKNOWLEDGEMENTS

The author wishes to thank Mr. J. D. Fryer and Dr. K. Holly of the A.R.C. Unit of Experimental Agronomy and Dr. H. Roberts of the National Vegetable Research Station for their assistance in providing information on crop and weed susceptibility.

Particular thanks are due to Mr. M. E. Thornton for his part in the field work carried out on the experiments.

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- <sup>3</sup>Roberts, H. (1957). National Vegetable Research Station. *Unpublished data*.

\* Paper given to the 4th British Weed Control Conference.



# WEEDKILLER

*for*

## INDUSTRY

FISONS LTD. introduced their new total weedkiller "Weedex" which is based upon Geigy Symazine, at a press conference at Chesterford Park, on 10th February. The programme was introduced by Mr. D. S. Bird, Vice-Chairman, Fisons Ltd., followed by a Technical Appreciation of Simazine by Mr. G. G. Fisher, Technical Officer, Fisons Pest Control Ltd., this in its turn was followed by an account by Mr. R. L. West, the Industrial Sales Manager of Fisons Pest Control Ltd. upon "Weedex" (Simazine) in Industry."

Fisons Horticultural Department will be responsible for marketing Weedex to the retail and general horticultural trade, whilst Fisons Pest Control will handle industrial sales.

### Technical Appreciation of Simazine

Chemical Weed Control divides broadly into two main categories. Selective weedkillers are used on lawns or certain crops in order to kill weeds without damage to the crop or lawn grasses.

With general or total weedkillers, the aim is to clear all vegetation from a given area for reasons of safety, good maintenance and tidiness so that, of course, the question of crop safety does not arise. Soluble total weedkillers have been used for many years but with the marked disadvantage that they do not persist for any length of time—they are washed through the upper layers of soil by rainfall.

In recent years new organic chemicals have been discovered which are of low bulk, safer to use, and above all, have much greater persistence.

The first of the new weedkillers were the substituted ureas, including monuron. More recently, the triazine group of herbicides was discovered by J. R. Geigy in Switzerland. The most well known of these new triazine derivatives, Simazine, is used as a basis for Weedex. It contains 50% Simazine (2-chloro-4, 6-bis (ethylamino)-s-triazine) and the rest is an inert filler. Weedkillers based on Simazine have been widely tested in Europe,

America and most countries of the world. They have been under review in this country since 1956.

What properties does Weedex have which combine to make it an outstanding new contribution to the science of weed control?

1. *Water Solubility* is extremely low—only 5 parts per million. When applied to the soil, it remains in the surface layers for long periods, continuing to prevent invasion by new weeds after the existing ones have been killed. It can carry over its effect into the year after spraying, so that lower dosage rates can frequently be used in subsequent years to maintain weed control.

Apart from giving persistence, its relative insolubility allows Weedex to be applied in the early spring, so that weeds can be controlled as soon as they start to grow, without any need to clear away unsightly dead remains.

2. *Mode of Action.* Weedex should be applied to cover the surface evenly. If sprayed on to existing weeds, it will not affect them immediately since it shows little or no herbicidal activity through the leaves but acts entirely through the roots. Due to soil moisture and subsequent rainfall, a minimum amount of downward movement takes place, which activates the chemical bringing it into contact with rooting systems. Weedex is absorbed by the roots of weeds and carried to all parts of the plant. The first symptoms are yellowing of the foliage and burnings, especially at leaf margins, leading to the gradual death of the plant.
3. *Performance against Weeds.* Weedex has a wide range of effectiveness against weeds, but weed species vary in susceptibility, often within the same family. For example, most grasses are very sensitive to Weedex, but others, notably Couch grass, require the high dosage rates to secure eradication.

For the most part, differences in susceptibility can be explained by the depth of rooting, and





RECLAMATION OF OVERGROWN PATHWAY  
*Foreground treated with simazine*



TOTAL WEEDKILLER TRIAL GROUNDS AT  
 CHESTERFORD PARK

*Photograph shows a treated area and control strips*

certain deep rooting perennials may require more than one application to give complete control.

4. *Safety in Handling.* Weedex is completely safe for human beings, animals and fish.

Because of its low solubility and disinclination to leach in the soil, there is negligible risk of injury to nearby crops, flower beds or trees. Since it does not affect foliage, there is little danger of accidental damage through spray drift. These properties make Weedex eminently suitable for treatment of weeds in landscaped areas, including garden paths, or for band treatment beneath fences. It has already been adopted for control of grasses surrounding the bases of many orchard trees.

Possible uses for aquatic weed control do not involve any danger to fish.

5. *Other Safety Factors.* Weedex is non-inflammable, and its use involves no risk in petroleum installations, timber yards or other areas where the use of an inflammable weedkiller might be hazardous.

Apart from its effect on plants, Weedex is a very stable chemical. It is non-corrosive to equipment and presents no problem in conductivity when used on electrified railway signalling systems, transformer stations, etc.

6. *General.* Weedex is available as a wettable powder of small particle size, which readily suspends in water. The amount of water is not critical, but should be sufficient to give even coverage of the soil surface—at least 100 gallons

of water per acre. Most industrial applications will be done by powdered or knapsack sprayer, but Weedex is equally effective when applied by watering-can, providing that plenty of water is used.

The optimum period for application is in early spring when growth is about to start. Weedex can, however, be used throughout the growing season, providing adequate moisture is available to move the weedkiller into the root zone.

One application in the spring will control weeds for the next 12 months. A proportion of the chemical may remain in the soil for longer periods.

Dosage rates of 30 to 40 lbs. of Weedex per acre will control weeds under many different circumstances. On light sandy soils it has been found that 30 lbs. of Weedex per acre is adequate, whilst heavy soils rich in organic matter will require the 40 lbs. rate. Where the vegetation consists of annual weeds only, dosage rates of from 20 to 30 lbs. per acre are used according to the type of soil. Where purely preventive weed control is required following a Weedex treatment in the previous year, dosage rates vary from 10 to 25 lbs. per acre.

In the special case of railway tracks, the ballast materials used are found to give a very suitable medium for the action of Simazine as a weedkiller, and dosage rates are approximately half those required to control weeds growing in an average soil.



# **\*Tests of 2,4-DES, CIPC and DINOSEB on Royal Sovereign Strawberry**

By R. I. C. HOLLOWAY  
(*East Malling Research Station, Kent*)

## **Synopsis**

Results are given of a field trial in which the treatments were 3 or 5 lb. per acre 2,4-DES, applied three times during the summer, in conjunction with either 2 lb. CIPC or 2 lb. dinoseb (amine) in the winter, together with an unweeded control. The trial lasted for three seasons.

2,4-DES alone (in the first season) had no harmful effects on the strawberry plants. 2,4-DES + dinoseb reduced vigour but not yield, whereas 2,4-DES + CIPC had no effect in the second season but reduced both vigour and yield in the third season.

## **Introduction**

This field trial was planned to give information on the effects of three herbicides, viz. 2,4-DES, dinoseb and CIPC, all of which appeared likely to give adequate weed control, on the growth and cropping of the strawberry.

The herbicidal properties of 2,4-DES were first described by King, Lambrecht and Finn.<sup>1</sup> Isleib and Aldrich,<sup>2</sup> in America, investigated the effects on the growth and yield of strawberries, and found no reduction in crop. In the west of England

Roach<sup>3</sup> found no serious damage in several trials.

Dinoseb was first described as a weedkiller by Crafts.<sup>4</sup> Danielson and Hofmaster<sup>5</sup> showed that dinitro compounds applied at 2 lb. per acre to dormant strawberries in Virginia gave no injury. Klingman and Morrow<sup>6</sup> found no injury to strawberries from dinoseb (alkanolamine salt) in November, whilst CIPC in March gave severe injury. CIPC was introduced in 1951.<sup>7</sup> Danielson and France<sup>8</sup> used it satisfactorily on strawberries.

## **Experimental Details**

The trial was begun in mid April 1956 on *Royal Sovereign* strawberry plants which had been planted in November 1954 at 18 in. x 36 in. Each plot consisted of 24 plants in 2 rows of 12, with single guard rows between plots, the design being a 2 x 2 factorial with double controls, in four blocks. The treatments were 3 or 5 lb. per acre 2,4-DES (commercial preparation) applied approximately before flowering, before strawing the plots, and after fruiting. Each of these plots had either 2 lb. per acre dinoseb (triethanolamine

salt) or 2 lb. per acre CIPC (dissolved in acetone and emulsified with Agral) applied once during the winter. The sprays were applied with a bucket pump delivering large droplets at a pressure of approximately 50 lb. per sq. in., at 200 gal. per acre. Control plots were unweeded except when all plots were cultivated, in early spring and again after cropping. Otherwise the plots had normal management. Straw was put down at the end of May and the plants were mown after cropping each year.

The main records taken on the plants were the heights and spreads in May and October, and crop records. Weed records were taken with a 10 point or 6 in. square quadrat.

## **Discussion**

The first year's results show that 2,4-DES had no effect on the strawberry plants, and in subsequent years no difference was shown in the effects of the two rates on the plants. Isleib and Aldrich<sup>2</sup> and Roach<sup>3</sup> found no adverse effects of 2,4-DES on strawberries in the open. There were no plots receiving the winter treatments, CIPC and dinoseb, without 2,4-DES,

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but since the 2,4-DES alone had no significant effects, it may be concluded that the later differences were mainly, or entirely, due to the winter treatments.

The reduction in fruit size after the second winter application of both dinoseb and CIPC is accounted for by the reduction in vigour shown in May, as also is the smaller amount of rotting. The lower yield on the plants receiving CIPC, following reduced vigour, is perhaps the most important effect shown. This difference from the results after the first application may be due to the avoidance of spraying the crowns on the first occasion, or to the difference in the times of application. In both years an effect of CIPC on weeds was shown four months after application, this being mid May in the second year, when the strawberry plants were growing actively. Thus application of CIPC in January appears to be too late to avoid harmful effects on the strawberry plants.

The plants receiving dinoseb showed no reduction in yield, although their vigour was reduced when the spray was applied to the crowns in January.

Thus 2,4-DES in summer seems reasonably safe to use, and dinoseb applied early in the winter and kept off the crowns is also worth further trial.

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\* Abstract of paper given at 4th British Weed Control Conference.



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# NEWS

## Appointment in the National Agricultural Advisory Service

Mr. E. Davies, B.Sc., at present Deputy County Advisory Officer for Yorks. (W.R.), has been appointed County Advisory Officer for Monmouth as successor to Mr. J. Howard Morgan, B.Sc. who became Deputy Regional Director at Cardiff Subcentre on 1st January, 1959.

Mr. D. A. Hole, N.D.A., F.R.I.C.S., Regional Land Commissioner, Reading, is to be appointed Deputy Director of the Agricultural Land Service in succession to Major E. S. Dobb, F.R.I.C.S. (whose forthcoming promotion to Director was recently announced).

Mr. D. A. Hole, aged 56, obtained the National Diploma in Agriculture at Leeds University in April, 1926. He qualified in 1929 as a Professional Associate of the Chartered Surveyors Institution (now the Royal Institution of Chartered Surveyors) and became a Fellow in 1942. He was appointed to the Agricultural Land Service in 1930 and promoted to Land Commissioner in 1941. In March, 1950, he was promoted to Provincial Land Commissioner and posted to Bristol. He was transferred to Reading in February, 1957.

## Liaison Officers

The Minister of Agriculture, Fisheries and Food has appointed the Earl of Malmesbury, T.D., D.L., as his personal Liaison Officer for the counties of Berkshire, Buckinghamshire, Isle of Wight, Middlesex and Oxfordshire in succession to Mr. L. G. Troup, who has resigned for personal reasons.

Lord Malmesbury, a professional associate of the Royal Institute of Chartered Surveyors, owns about 2,000 acres in Hampshire, and farms 350 acres. He has been Deputy Chairman of the Hampshire Agricultural Executive Committees since 1955; has been a member of the Agriculture and Forestry Committee, Royal Institute of Chartered Surveyors since 1953; and was Chairman of the Hampshire branch of the Country Landowners' Association in 1954/56.

## Rabbit Clearance

Earl Waldegrave, T.D., Joint Parliamentary Secretary to the Ministry of Agriculture, Fisheries and Food, at a Conference of Rabbit Clearance Societies, convened by the Agricultural Central Co-operative Association recently, said that the Conference was an important land-mark in the history of rabbit-clearance in Britain because it was the first occasion on which representatives of groups of farmers, organised against the return of the rabbit menace, had come together to discuss the best ways and means of achieving this highly important objective on a national basis.

The Fourth F.B.I. Enquiry into Industrial Trends indicates that there are no great divergencies from the average trends over the last four months. The general expectation of improvement in the future is about the same as it was four months ago. There are indications that in many cases output is expected to rise without an increase in the labour force.

## Certification of Loganberry Plants

A new Special Stock scheme for the inspection and certification of loganberry plants is being introduced this year by the Ministry of Agriculture, Fisheries and Food.

The scheme has been made possible by the existence of a clonal stock which originated at East Malling Research Station and was maintained in a vigorous and healthy condition by Long Ashton Research Station. This stock is believed to be free from the virus disease affecting most commercial loganberry stocks and in limited field trials has produced higher yields. It has been propagated by the Nuclear Stock Association who are, this spring distributing a limited supply of one-year bedded plants and rooted tips. These will be eligible as parent stock for the Ministry's certification scheme.

Enquiries should be addressed as follows:

*Supplies of plants:* Nuclear Stock Association Ltd., Agriculture House, Knightsbridge, London, S.W.1.

*Certification Scheme:* Ministry of Agriculture, Fisheries and Food, Plant Health Branch, Whitehall Place (West Block), London, S.W.1.

## Crop Spray Equipment Manufacturer joins the Birfield Group

Birfield Limited announce that they have acquired a controlling interest in Micron Sprayers Limited, of 54/56 Battersea High Street, London, S.W.11. In future the Micron range of crop sprayers will be produced by companies within the Birfield Group, and from February 23rd the headquarters of Micron Sprayers Limited will be transferred to 44, Bradford Street, Birmingham 5 (Telephone: Birmingham Midland 0276).

The reconstituted Board of Directors comprises M. G. H. Brown (Chairman), S. Walker, E. J. Bals, M.I.B.A.E. (Austrian), M. V. Lee and G. J. Rose, B.Sc., F.R.E.S.

Micron Sprayers Limited produce a range of ultra-low volume crop sprayers for portable use and for attachment to tractors and aircraft. A rapidly rotating atomiser is used to break down the spray into extremely minute but even droplets; the air blast principle of distribution accurately directs these to give a complete and uniform cover of protectant chemical on all surfaces of the foliage.

Any type of chemical can be sprayed and, because of the uniformity and intensity of cover from such fine droplets, far better protection is afforded to the crop. Because of their minute size the droplets dry quickly without scorch. The total amount of liquid sprayed per acre is low, ranging from  $\frac{1}{4}$  to 8 gallons, dependent upon the size and type of crop, thus saving time and labour.

Considerable sales with extremely satisfactory results to customers have been achieved both in this country and abroad. With the resources of the Birfield Group of Companies behind them, Micron Sprayers Limited are expected to expand sales considerably in the future.

Mr. D. Boocock, Technical Director of Messrs. Standardised Disinfectants Company Ltd., is visiting Holland, Germany, France and Belgium in March. Calling on research organisations dealing in agriculture, forestry and wood preservation as well as making contacts with various commercial interests.



# NEWS

## Importation of Potatoes into England or Wales

The health regulations relating to the importation of potatoes, both maincrop and new have been consolidated into one new Order, entitled the Importation of Potatoes Order, 1959 (S.I. No. 221).

A new feature in this Order is that the countries or parts of countries from which potatoes may be imported are listed. In the case of new potatoes, the specific periods during which importations will be permitted are also scheduled.

Provision has also been made for a slightly different form of certificate to accompany consignments of potatoes and also for an additional certificate to be furnished when the potatoes are imported from a country other than the country of their origin.

All potatoes must be securely packed in new bags or new containers.

The importation of seed potatoes remains prohibited.

The Order makes no major changes in the existing plant health safeguards nor is it calculated to affect the normal pattern of the import trade in potatoes.

1. Hitherto the importation of potatoes has been governed by the Importation of Plants Order, 1955. A further Order entitled the Importation of Plants (Amendment) Order, 1959, (S.I. No. 220) has been made removing potatoes from the provisions of the 1955 Order.

2. The Importation of Plants (Amendment) Order, 1959, (S.I. 1959, No. 220) and the Importation of Potatoes Order, 1959, (S.I. 1959, No. 221) have been made under the Destructive Insects and Pests Acts, 1877-1927. Copies may be obtained from H.M.S.O., York House, Kingsway, London, W.C.2, or from any bookseller, price 2d. and 6d. (by post 4d. and 8d.) respectively.

## Fowl Pest in Essex

Since 28th December, 1958, thirty outbreaks of fowl pest have been confirmed in Essex. The county (with the exception of the county boroughs of East and West Ham) has therefore been declared an Infected Area by the Minister of Agriculture, Fisheries and Food under the Fowl Pest (Infected Areas Restrictions) Order, 1956.

The restrictions will come into force on 26th January. Poultry may not be moved into, out of or within the Infected Area except under licence. The holding of poultry store markets in the Area is prohibited.

1. The Fowl Pest (Infected Areas Restrictions) Order, 1956, as amended by the Fowl Pest (Infected Areas Restrictions) Amendment Order, 1958, enables the Minister of Agriculture, Fisheries and Food to apply by means of Local Area Orders the provisions of the General Order with a view to bringing under control as quickly as possible a serious fowl pest situation in a particular area.

The thirty outbreaks have occurred in the following parishes (No. of outbreaks per parish in brackets):

Boreham (2), Brentwood (1) . . . and so on.			
Boreham ..	2	Halstead	
Brentwood	1	(Urban) ..	1
Colne Engaine	1	Margaretting	1
Epping ..	2	Rayne ..	3
East		Steeple ..	1
Hanningfield	2	Stapleford	
Felstead ..	1	Abbotts ..	1
Great Baddow	2	Thundersley	3
Great		Wakes Colne	1
Hallingbury	1	White Roothing	1
Great Waltham	1	Wickford ..	1
		Woodham	
		Ferrers ..	2
Borough of Romford .. 2 outbreaks			

Swallowfield Aerosols Limited is a new company, formed to take over the Industrial Division of Walter Gregory and Company Limited.

The new company will concentrate on the filling of Aerosols and allied products for the Trade. It has its own experienced technical staff and the research resources of the Parent company at its disposal.

The address is: Swallowfield Aerosols Limited, Swallowfield, Wellington, Somerset.

The African Pyrethrum Board recently endowed a fellowship for research on pyrethrum Department of Agricultural Sciences, School of Agriculture, Sutton Bonnington, Loughborough, of Nottingham University.

The Fellowship is intended to promote advanced research on the application of synergised pyrethrins as insecticides for use on field and horticultural crops, particular emphasis being placed on their value immediately prior to harvesting. A considerable amount of laboratory work, especially in connection with the development of bio-assay methods is anticipated.

As far as the work in progress is concerned, comparative greenhouse trials of synergised and non-synergised pyrethrum formulations, and some synthetic insecticides against aphids are in progress, as well as investigations into the relative efficacy of various synergists, emulsifiers and anti-oxidants and wetting agents for use in such formulations.

## The Importation of Raw Vegetables Order, 1959

As in past years the Minister of Agriculture, Fisheries and Food has made an Order allowing the importation of raw vegetables (excluding potatoes) from parts of Belgium, France, Holland and Italy during specified periods of the year.

The Order comes into operation on 1st March, and provides for alternative safeguards against Colorado beetle to those set out in the Importation of Plants Order, 1955.

1. The Order, entitled the Importation of Raw Vegetables Order, 1959 (S.I. 1959 No. 219), has been made under the Destructive Insects and Pests Acts, 1877 to 1927 and may be obtained from H.M. Stationery Office, York House, Kingsway, London, W.C.2, or from any bookseller, price 3d. (by post 5d.).

2. In previous years new potatoes were included in this type of Order but they are now the subject of a separate Order dealing exclusively with potatoes. (The Importation of Potatoes Order, 1959, S.I. 1959 No. 221).

3. The 1955 Order referred to is S.I. 1955 No. 81.



## BOOK REVIEWS

### **The Control of Pests and Diseases in Agricultural and Horticultural Crops.**

By G. L. Hey, M.A., and K. Marshall.  
Published by Vinton & Company Ltd.

"This book has been written with the object of providing students, farmers, growers and gardeners with a guide to the control of the more important pests and diseases of horticultural and agricultural crops. The emphasis is on control and only brief details of the life histories of the pests and diseases are given, but these are sufficient to enable the reader to know when to expect attack and to appreciate the reasons for the particular control measures recommended.

"The pesticides in common use today are referred to, as are also methods and machinery for their application.

"The authors hope that the reader whether student or practising grower, will find that the book offers a convenient and easy guide to current measures for controlling some of the more important pests and diseases which are responsible for the loss of many millions worth of damage each year in Great Britain alone."

This extract from the preface describes the aims of the book and as such it succeeds.

Perhaps a natural sequel to this book, which gives a brief and concise account of a wide range of pests and diseases on a large variety of crops, would be to take the various chapters e.g. *Pests on Farm and Market Crops* add more detail and issue them separately for the benefit of the growers who specialise in the various fields of agriculture and horticulture.

One or two of the photographs are not very clear and the book appears to make the assumption that the grower has had enough experience to either identify the pest before it has too great a hold to do much damage or to know which pests and diseases are likely to occur on his particular crops in his particular area. These are the only criticisms which can be levelled at this useful and informative publication.

### **Concentrated Spray Equipment, Mixtures and Application Methods.**

By Samuel Frederick Potts. Published by Dorland Books, Caldwell, New Jersey, U.S.A.

This is a valuable book and runs to 598 pages. It deals with what is a relatively new concept of applying agricultural chemicals. It is the outcome of a number of years of experience which have revealed the need of a treatise that would meet the requirements of grower, municipality, research worker, equipment and chemical manufacturer and others.

The author, in his preface, observes that the broad field of concentrated spray application has grown up overnight to the extent that several times as many acres are treated with concentrated spray as by conventional spraying and dusting.

Although the book deals, naturally, with the American scene of operations and should be read with that background in view, it is, none the less, of great value to readers in this country.

It is pleasing to note that Mr. Potts includes early on in his book a Terminology, and definitions of particle size and terms relating to concentrated and dilute spray, aerosol, smoke and dust application.

Not the least value of this work is the scholarly approach to what is essentially a modern subject. There are thirteen pages of contents, seven pages listing tables and 162 illustrations.

As will be appreciated, to attempt to review a volume of this nature would require many pages for Mr. Potts has accumulated what is a wealth of material on this very diverse subject. The fundamentals of application, ground spray equipment, mixtures, control of weeds and woody plants, aerosols, are some of the sections, and in the appendix which runs to some 76 pages, the range extends from determining particle size of aerosols and fine sprays to formulation specifications.

A minor criticism one would make is that there is no price-mark on the cover, and for such a valuable

publication a rather stronger paper protective jacket than the somewhat flimsy transparent paper is needed.

The publication is well printed on good quality paper, and "easy" on the eye.

Probably the best summary would be that of the author himself, for in his preface he observes:

"The fundamentals and the potentialities of this whole subject, until recently, were very poorly understood even by most research workers in pest control. Moreover, the writer feels that this entire field should be clarified and brought together under one cover."

One agrees; Mr. Potts expresses the hope that "millions of Americans will read and benefit from the book."

May we also cherish the hope that people in Britain as well as many other overseas countries, will read this book, too, and extend the sum total of their knowledge accordingly.

The big asset of the book is that it is at once knowledgeable and practical: operators may buy it, confident that they will understand every word.

## NEW PUBLICATIONS

### **Isotopes at Work.**

Published by the Institute of Directors,  
10 Belgrave Square, London, S.W.1.  
Price 2/-.

This publication, prepared by the Atomic Energy Research Establishment, at the special request of the Institute, is said to be the first of its kind in the world.

Uses listed under fertilisers, insecticides, include Mixing, bulk flow and recycling in production: tracers. Flow and process control: density gauges. Characteristics of phosphoric acid plants. Measuring distribution of sprayed foliar fertilisers and insecticides.

Measuring plant uptake of fertilisers. Measuring plant - available nutrients in soils (and need for fertiliser).

Measuring distribution of systemic insecticide in plants. Entomological researches in migration and habits. Study of action of insecticide and biology of resistant strains.

Included under timber and wood products are study of pest migration (e.g. weevils, death watch beetle): tracers.

Pest control with gamma rays (experimental only).



## NEW PUBLICATIONS

### **Agricultural Aviation.**

*Published by European Aviation Centre, The Hague (Netherlands).*

During the last decade the use of aircraft in agriculture and forestry has increased considerably throughout the world. The airplane has appeared to be a powerful weapon in the struggle of man against food shortage, a food shortage caused by the damage done by insects, diseases and weeds, but which may also have been brought about through exhaustion of the soil when it is insufficiently fertilised.

The new periodical "Agricultural Aviation" is a forum for all those who—wherever in the world—are in some way concerned with the use of aircraft in agriculture and forestry. It aims to keep them posted on any new technical developments in this field: new types of aircraft with the application equipment going with them, agricultural chemicals and fertilisers. Its columns are open to research workers who want to publish articles on their work with aircraft, which are intended for a highly, specialised group of readers who may be expected to be interested in such articles.

Although "Agricultural Aviation" is published by the European Agricultural Aviation Centre, the contents are by no means limited to agricultural aviation in Europe. On the contrary, as a source of up-to-date information on a world-wide scale this periodical wants to be the voice of the ever developing agricultural aviation. For this reason it is published in two editions: in English and in French.

The first issue, in a very attractive make-up, contains articles on aerial potato spraying in England and forest spraying in Germany, together with descriptions of new types of agricultural aircraft and equipment, and extracts from recent agricultural aviation literature.

This Centre is an independent international, non-profit organisation, which aims at promoting the use of aircraft and helicopters in European agriculture and forestry. It was established about half a year

ago under the auspices of the O.E.E.C., and so far the governments of 10 European countries have joined it as members.

Among the numerous activities of the E.A.A.C., the informative aspect holds a prominent place. Via this quarterly periodical persons interested both in and outside the member-countries—manufacturers of agricultural chemicals, manufacturers of aircraft, operators, government officials and research institutes—are kept informed of any developments in agricultural aviation.

### **Esso Magazine. Winter 1958-59.**

*Published by Esso Petroleum Company, Limited, 36 Queen Anne's Gate, London, S.W.1.*

The contents' matter generally is of a high standard and one article, "The Study of Living Things" discusses the activities of the Field Studies Council. It is profusely illustrated with colour photographs.

### **Dentolite Catalogue.**

*Published by Denton Edwards Paints Limited, Abbey Road, Barking, Essex.*

### **Project No. 57 07 07. Report No. 2 "Investigation of the Effect of 'Dentolite' Paint on Micro-Organisms."**

Olsen and Wang, Farvehandel.  
*Published by Denton Edwards Paints Limited, Abbey Road, Barking, Essex.*

### **Industrial Hose Catalogue.**

*Published by BTR Industries Ltd., Herga House, Vincent Square, London, S.W.1.*

The catalogue outlines the various types of BTR rubber and synthetic hoses which are available.

### **Silver Anniversary Issue of the National Agricultural Chemicals Association.**

*Published by National Agricultural Chemicals Association, 1145-19th St., N.W. Washington, 6, D.C.*

The importance of the Pesticides' Industry is stressed throughout this anniversary issue.

### **Design of Poplar Experiments**

*By J. N. R. Jeffers, A.I.S., Forestry Commission.  
Published by Her Majesty's Stationery Office. Price 1s. 9d. net.*

Forestry Commission: Forest Record No. 38

A well-authenticated record of work done, extending to 19 pages.

### **Retail Price List for 1959.**

*Published by Ratsouris Limited, 50 Central Street, London, E.C.1.*

Ten pages of useful information including some details of control measures for insects and rodents.

"Fytolex" and "Ceresan" Two revised leaflets.

*Published by Bayer Agriculture Ltd., Thorneycroft House, Smith Square, London, S.W.1.*

Copies of these newly revised leaflets are for the Bayer Information Folder, and further supplies of leaflets on these and the firm's other products are available on request for distribution to one's customers.

### **Plant Food Review.**

*Published by National Plant Food Institute, 1700 K. Street, N.W. Washington, 6, D.C.*

Contains many interesting articles relative to fertilisers.

This is the Summer and Fall combined editions, 1958.

### **In the Melting Pot. Tri-mor Dense Guncrete.**

*Both published by the Morgan Crucible Company Limited, Battersea Church Road, London, S.W.11.*

### **I.C.I. Garden News: No. 2.**

*Published by Plant Protection Ltd., Yalding, Kent.*

A new survey finds the facts about the gardener and some interesting facts are recounted.

The "News" also notes that sales of garden chemicals are rising.

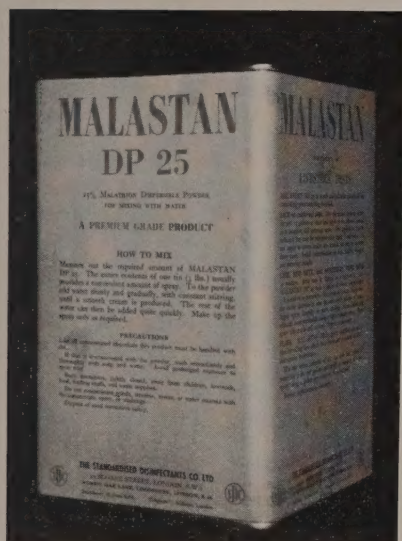
### **Murphy Farmers' Booklet and Price List, 1959.**

*Issued by the Murphy Chemical Company Limited, Wheathampstead, Hertfordshire.*

This booklet is written to provide farmers and market gardeners with a concise guide to weedkilling and the control of the most important pests and diseases. In this 1959 edition, recommendations have been revised, where necessary, to bring them up-to-date.



# NEW PRODUCTS



**Malastan DP-25—A new convenient 3 lb. pack**

The Standardised Disinfectants Company are now supplying Malastan DP-25 in a new 3 lb. pack which makes this product available in an attractive container of exceptionally convenient size.

Malastan DP-25 is a water dispersible powder containing 25% premium grade malathion. It mixes easily with water and produces an exceptionally stable suspension.

Malastan DP-25 is an insecticide with an exceptionally wide range of uses and controls many agricultural, stored products, livestock and public health pests.

In the livestock field, it is of especial interest to poultry breeders because it controls not only red mite but also Northern fowl mite, a pest difficult to control with other insecticides.

In the agricultural field, Malastan DP-25 is used for protecting ground crops, fruit trees and ornamental plants and is particularly effective against aphids, leafhoppers, white flies, thrips, mealy bugs, scale insects, some caterpillars, and the active stages of red spider mites.

The entire contents of one 3 lb. tin are just sufficient to provide 100

gallons of spray for use by the farmer, horticulturist, and smallholder.

The use of malathion for controlling pests attacking foodstuffs and other commodities in store is now well established, and Malastan DP-25 may be used according to the latest Ministry of Agriculture recommendations for spraying the walls and other surfaces of stores, ships, railway wagons, etc., as well as for spraying stacks of grain and foodstuffs and for application to the surface of standing grain.

The entire contents of a 3 lb. tin of Malastan DP-25 mixed with 5 gallons of water will provide a spray which can safely be used against most stored products insects. Flour beetles, grain weevils and saw-toothed grain beetles are especially susceptible whilst even the Khapra Beetle (*Trogoderma granarium*) can be controlled with Malastan DP-25.

Malastan DP-25 is one product from the Standardised Disinfectants Company's extensive range of Malastan formulations of malathion and a technical leaflet about these products is freely available from the manufacturers, The Standardised Disinfectants Company Limited, 23 Sloane Street, London, S.W.1.

## Furniture Preservation against Pests

Furniture, whether new or old, is expensive to replace and frequently has an extra sentimental value. Antique furniture, the most valuable of all, is also probably the most prone to attack by wood-boring beetles and other pests.

To deal with this problem, a new service has been formed to collect infested furniture of any kind and treat it against all pests, using modern equipment and chemicals, and deliver it to the owner with a guarantee against future infestation. This service operates initially in an area of a 20 mile radius of Trafalgar Square, London, but this area may be extended as the Service develops.

Operating under the name of the Furniture Preservation Service, the guaranteed treatment is carried out by Fumigation Services Limited, who have specialised in fumigation work for over thirty years, in conjunction with Woodworm & Dry Rot Control Limited. Chemical preparations are supplied by Rentokil Limited.

The service is a comprehensive one, as may be gathered by the close co-operation of these three organisations and the treatment gives protection against woodworm, moth, mites and other noxious insects. The treatment includes fumigation—in specially constructed chambers to kill all stages of wood-boring insects, mites and other insects; the application of a residual preparation—odourless and nonstaining—which renders the furniture impervious to further damage by wood-boring insects for many years; the spraying of upholstered surfaces with a moth-proofer—non-staining chemicals which cannot damage the most delicate fabrics, for proofing all textiles against moths and other insect pests. All treated furniture is stamped and guaranteed against further damage by wood-boring insects for a period of 5 years. In the unlikely event of re-infestation the furniture is retreated free of charge.



*The Guarantee Label*

The service can cater for any quantity of furniture and is therefore particularly suitable to deal with the problems experienced by Municipal Authorities, Hospitals, Schools and so on.

A standard list of charges is provided and prompt collection and delivery within their area can be made.



# DIARY DATES

(Hon. Secretaries are invited to send in details for inclusion in this column).

Association of Applied Biologists:  
Friday, 6th March.

General Meeting, followed by a symposium entitled, "Recent Advances in Plant Propagation."

11-00 a.m. Mr. G. K. Argles (Commonwealth Horticultural Bureau): "The effects of timing and of environment on root formation by cuttings".  
11-30 a.m. Dr. F. H. Vanstone (National Institute Agricultural Engineering): "Equipment for mist propagation developed at the N.I.A.E."

12-00 noon. Mr. J. T. Sykes and Mr. I. H. Williams (Wye College): "Some factors affecting regeneration of cuttings under mist technique".  
12-30 p.m. Mr. C. D. Dempster (N.A.A.S. Wolverhampton): "Propagation of evergreen shrubs and conifers under double glass and mist."

1-00 p.m. Interval for Luncheon.  
2-15 p.m. Dr. E. S. J. Hatcher (East Malling Research Station): "The propagation of fruit tree rootstocks from stem cuttings".

2-45 p.m. Mr. F. W. Shepherd (Rosewarne Experimental Horticulture Station): "A comparison of methods of striking softwood cuttings of *Cupressocyparis leylandii*, *Escallonia* "Crimson Spire" and *Pittosporum tenuifolium*".

3-15 p.m. Miss E. Emerson (Wye College): "Investigations into the vegetative propagation of Pelargoniums".

3-45 p.m. Discussion—opened by Mr. R. J. Garner (East Malling Research Station).

Industrial Pest Control Association:  
10th March.

"Progress in bird control measures"—lecturer to be decided.

Hotel Rembrandt, South Kensington, London, S.W.7, following Association luncheon.

The Plastics Institute:  
11th March.

"International Competition in the Chemical Industry," by S. P. Chambers, C.B., C.I.E. (Deputy Chairman, Imperial Chemical Industries Ltd.).

The Plastics Institute, Tenth Annual Lecture. 6-30 p.m. at The Wellcome Foundation Building, Euston Road, London, N.W.1. (near Euston Square Station).

(Admittance by ticket only, obtainable from The Plastics Institute, 6, Mandeville Place, London, W.1.).

The Fertiliser Society:  
17th March.

"Francis New Memorial Lecture" by H. U. Cunningham, M.C., C.B.E.  
2-30 p.m. in the Lecture Hall of the Geological Society, Burlington House, Piccadilly, London, W.1.

The North Riding of Yorkshire Education Committee:  
10th-12th April.

Week-end Course for Groundsmen  
Wrea Head College, Scarborough.

The Royal Society of Health:  
Health Congress, 27th April—1st May, 1959.

Conference 5 of the proceedings, Public Health Inspectors, will open on the afternoon of the 27th April when the President will be the Chairman of the General Council, Association of Public Health Inspectors, and the Recording Secretary, Mr. A. Denton Ogden, M.B.E., F.R.S.H. Chief Public Health Inspector, Chelmsford R.D.C.

2-30 to Address by the President.  
5-0 p.m. "Dampness in Buildings" by H. E. Gilby, F.R.I.C.S., M.I.Mun.E., J.P., F.R.S.H., Engineer and Surveyor, Hertford R.D.C.

"Housing Standards and Related Problems" by A. J. Stroud, M.R.S.H., Chief Public Health Inspector, Wellesborough U.D.C.

On the following day, Tuesday, 28th April, Conference 5 will continue as follows:

2-30 to "Some Topical Aspects 5-0 p.m. of Environmental Health Practice in the U.S.A." by R. G. Bond, M.P.H., M.R.S.H., Professor of Public Health Engineering and Director, Division of Environmental Health and Safety, University Health Service, University of Minnesota.

Symposium on "Insecticides and Public Health: recent trends":

(a) "The Problem of Insecticide Resistance" by J. R. Busvine, D.Sc., Ph.D., Reader in Entomology as Applied to Hygiene, London School of Hygiene and Tropical Medicine, University of London;

(b) "Modern Space Sprays and Residual Films" by T. F. West, D.Sc., Ph.D., F.R.I.C., A.M.I.Chem.E., M.R.S.H., European Operations Executive, African Pyrethrum Technical Information Service Ltd.

Section M—World Health, including Tropical Hygiene, will open on the 28th April, when the President will be Sir Kenneth Cowan, M.D., F.R.C.P., D.P.H., F.R.S.H., Chief Medical Officer, Department of Health for Scotland and the Recording Secretary will be Professor A. B. Semple, V.R.D., M.D., D.P.H., F.R.S.H., Medical Officer of Health for Liverpool.

The proceedings will be as follows:  
10-0 a.m. to Address by the President.  
12-30 p.m. dent.

Symposium on "The Role of the Social Sciences in the Promotion of Health":

(a) "The Social Sciences and the Health Services" by Roger Wilson M.A., Professor of Education, University of Bristol;

(b) "The Role of the Medical Officer of Health as a Social Scientist" by C. Fraser Brockington, M.A., M.D., D.P.H., F.R.S.H., Professor of Social and Preventive Medicine, University of Manchester;

(c) "The Value of the Social Sciences in the Promotion of Health in Tropical Countries" by T. H. Davey, O.B.E., M.D., D.T.M., Professor of Tropical Hygiene, University of Liverpool.

On Friday, 1st May, Section B—Food and Nutrition (in conjunction with Food Group, Society of Chemical Industry, will meet). The President will be J. R. Nicholls, C.B.E., D.Sc., F.R.I.C., Chairman of the Food Group, Society of Chemical Industry and the Recording Secretary will be A. E. Bender, B.Sc., Ph.D., F.R.I.C., Hon. Secretary, Food Group, Society of Chemical Industry.

The programme is as follows:

10-0 a.m. to Address by the President.  
12-30 p.m. dent.

Symposium on "Consumer Protection in Food-stuffs": by

(a) Miss Eirlys Roberts, Editor, Association for Consumer Research.

(b) Colin S. Dence, B.Sc., Managing Director, Brand & Co. Ltd.

(c) H. E. Monk, B.Sc., F.R.I.C., Public Analyst, Kent.

Venue is Harrogate and meetings will be held in the Royal Hall, Royal Baths and Hotel Majestic.